

D2 75. (Once amended) The process of Claim 74 wherein the host cell is obtained from a *Pantoea* species and the host cell is modified to eliminate the naturally occurring glucose dehydrogenase which oxidizes glucose to gluconate.

80. (Once amended) A process for the non-fermentative production of 2-KLG in an environment comprising host cells, comprising the following steps,

a. enzymatically oxidizing glucose by a glucose dehydrogenase to produce a first oxidation product, wherein said oxidation requires an oxidized form of an enzymatic co-factor;

b. enzymatically oxidizing said first oxidation product to produce a second oxidation product;

D3 c. enzymatically oxidizing said second oxidation product to produce a third oxidation product; and

d. enzymatically reducing said third oxidation product to 2-KLG by a 2,5-DKG reductase, wherein said reduction requires a reduced form of said enzymatic co-factor

wherein the oxidized form of said co-factor and the reduced form of said co-factor are recycled between and coupled to the first oxidizing step and the reducing step and said oxidized co-factor is  $\text{NAD}^+$  or  $\text{NADP}^+$  and said reduced co-factor is  $\text{NADH}$  or  $\text{NADPH}$ .

Please cancel claims 15, 16, 18, 20 - 28, 30 - 51, 58 - 62 and 77 - 79 without prejudice.

Please add the following new claims.

83. The process of Claim 63 wherein said glucose dehydrogenase activity is obtained from a bacterial, yeast or fungal source.

D4 84. The process of Claim 63 wherein said glucose dehydrogenase activity is obtained from a *T. acidophilum*, a *Cryptococcus uniguttalatus* or a *Bacillus* species.

85. The process of Claim 63 wherein at least one of the enzymes of steps a, b, c or d is immobilized.

86. The process of Claim 63 wherein at least one of the enzymes of steps a, b, c or d is in solution.

87. The process of Claim 63 wherein the 2, 5-DKG reductase is obtained from Corynebacterium or Erwinia.

88. The process of Claim 63 that is continuous.

89. The process of Claim 63 that is batch.

90. The process of Claim 63 that proceeds in an environment comprising organic solvents.

91. The process of Claim 63 that proceeds in an environment comprising long polymers.

92. The process of Claim 63 further comprising the step of obtaining ascorbic acid (ASA) from said 2-KLG.

93. The process of Claim 73 that proceeds in an environment comprising recombinant host cells.

94. The process of Claim 93 wherein said recombinant host cells comprise a member of Enterobacteriaceae.

95. The process of Claim 93 wherein said recombinant host cells are Pantoea citrea cells.

96. The process of Claim 93 wherein said recombinant host cells have a mutation in a membrane bound glucose dehydrogenase.

97. The process of Claim 93 wherein said host cells further comprise nucleic acid encoding a heterologous glucose dehydrogenase.

98. The process of claim 80 wherein the host cells comprise a member of Enterobacteriaceae.

99. The process of Claim 98 wherein said recombinant host cells are *Pantoea citrea* cells.

4  
D  
Cont

100. The process of Claim 80 wherein the host cells are modified to eliminate the naturally occurring glucose <sup>GDH</sup> dehydrogenase which oxidizes glucose to gluconate and wherein the host cells are modified to include a heterologous glucose dehydrogenase having a specificity for NAD<sup>+</sup> or NADP<sup>+</sup>.

---